

Figure 1

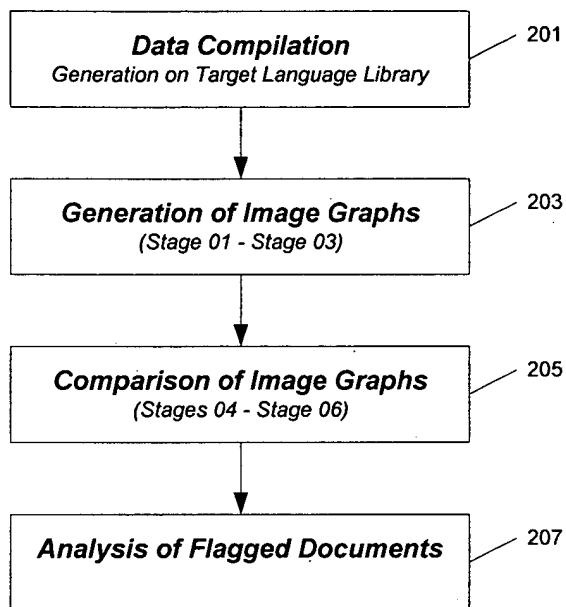


Figure 2

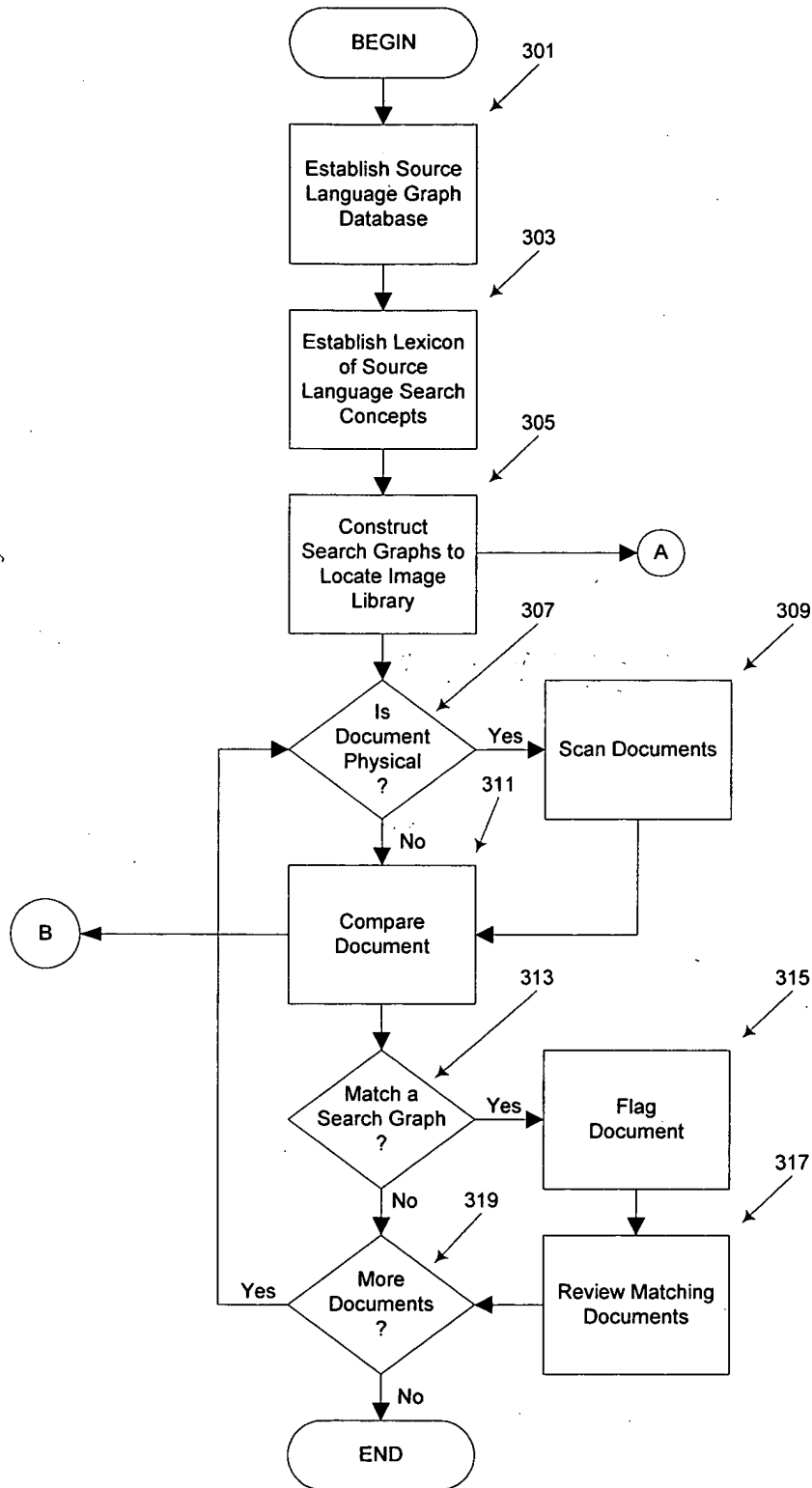


Figure 3

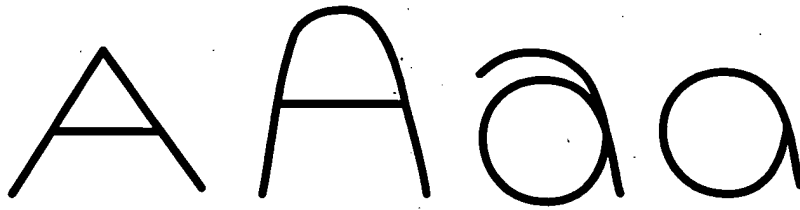
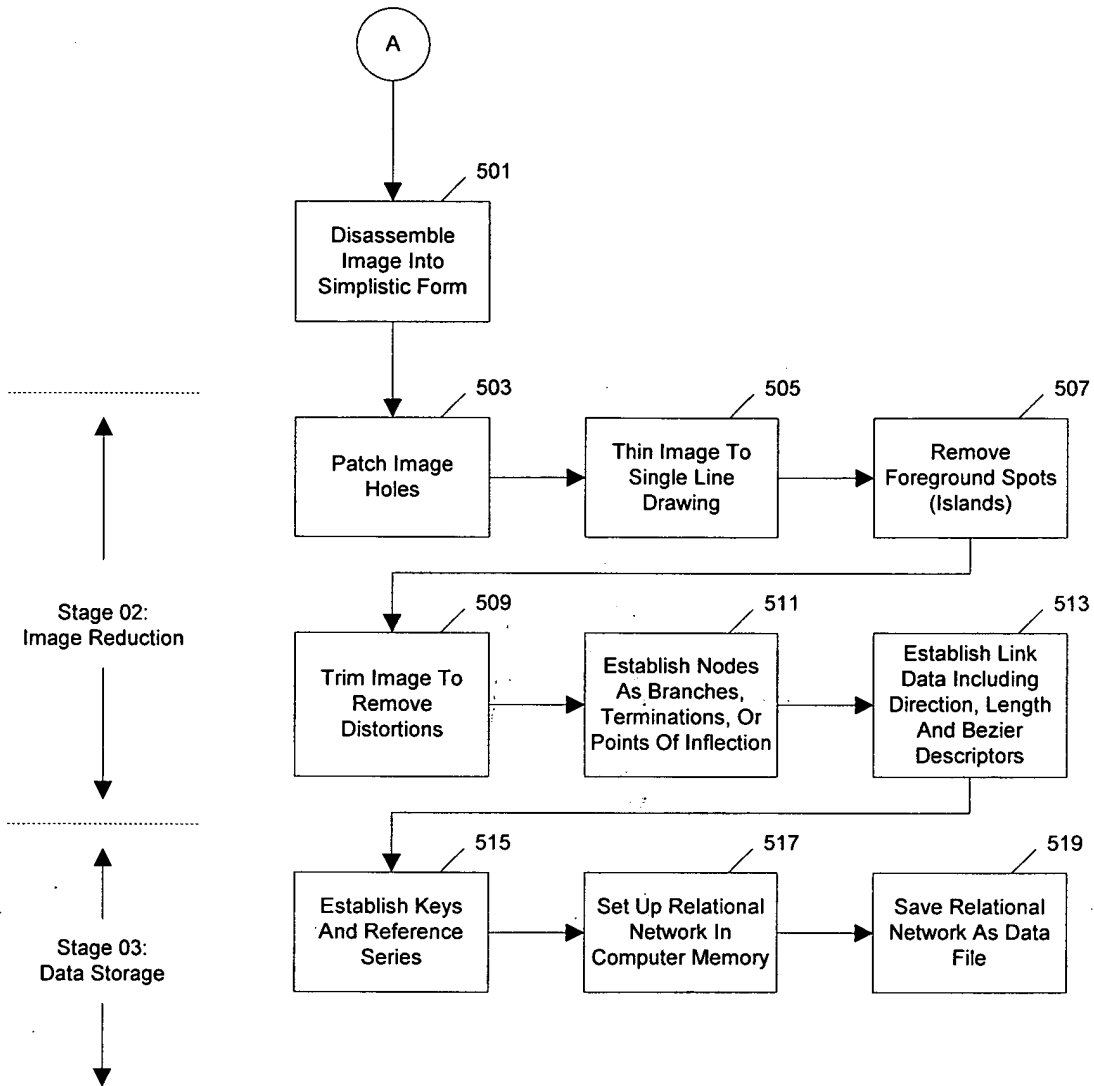
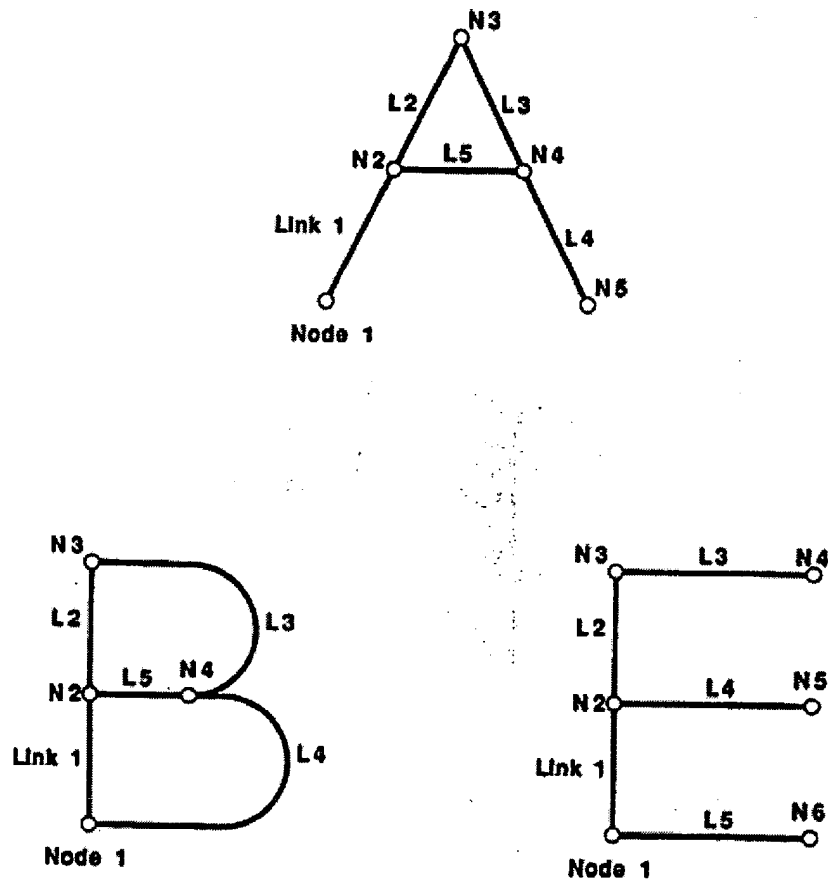


Figure 4



CREATION OF IMAGE LIBRARY

Figure 5



Link/node structure for characters "A", "B" and "E"

Figure 6

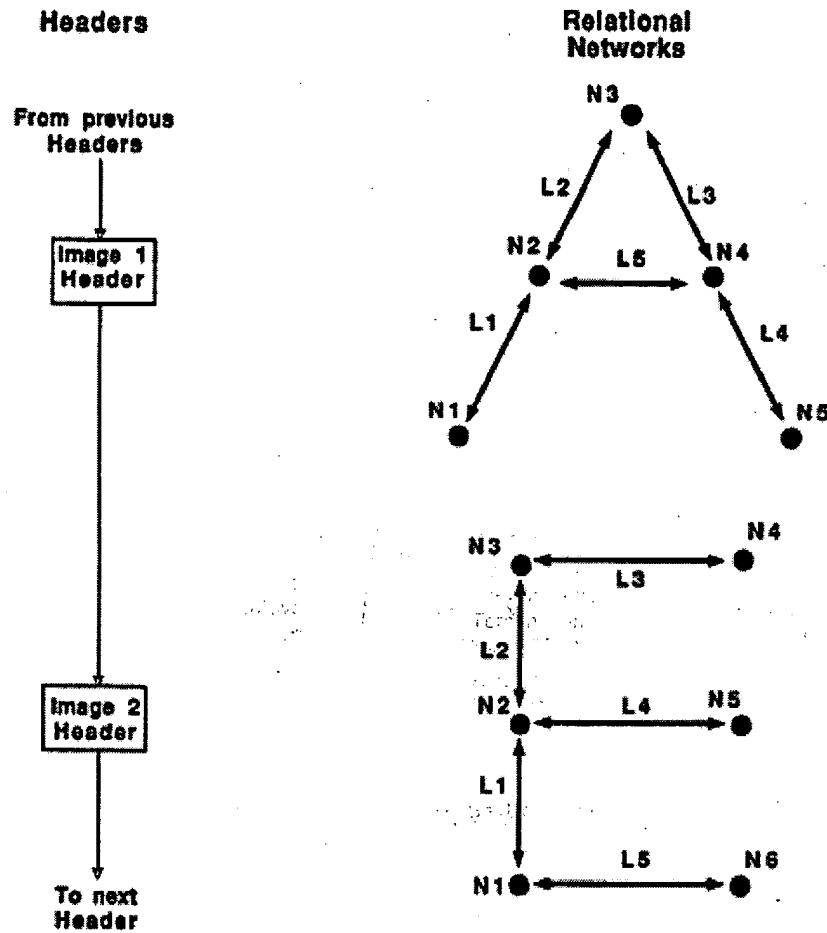


Illustration of data structure

Patent provided by Sughrue Mion, PLLC - <http://www.sughrue.com>

Figure 7

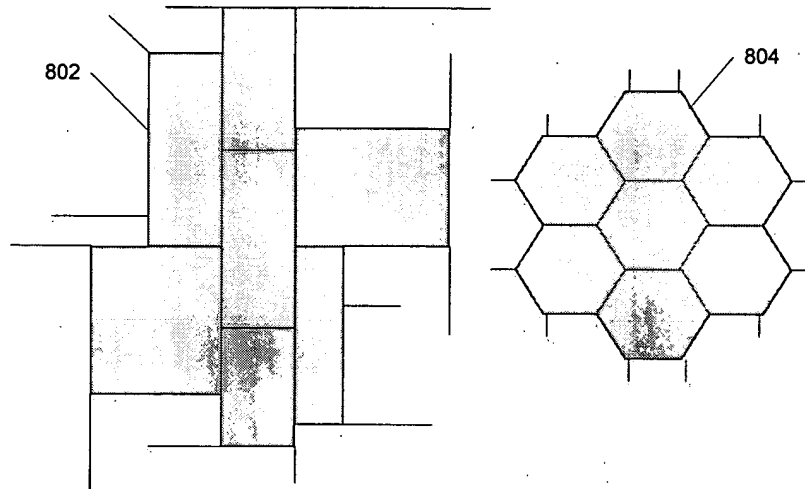
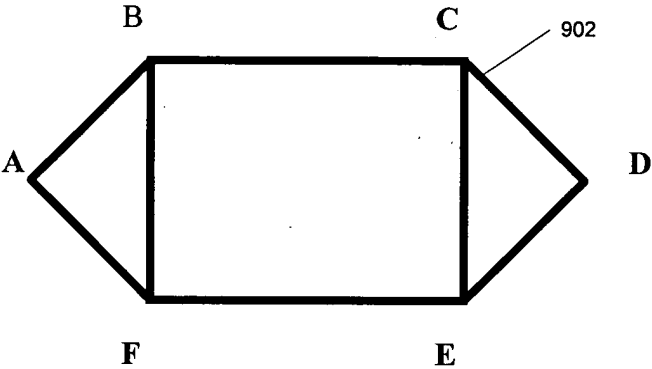


FIG. 8

Sample Graph:



Connectivity Indices

Vertex	Connectivity Array		
	3	2	1
A	0	1	0
B	3	1	0
C	3	1	0
D	0	1	0
E	3	1	0
F	3	1	0

FIG. 9

Before						
A	0	1	0	0	0	1
B	0	0	1	0	0	1
C	0	0	0	1	1	0
D	0	0	0	0	1	0
E	0	0	0	0	0	1
F	0	0	0	0	0	0

After						
	C	E	B	F	D	A
C	0	1	1	0	1	0
E	0	0	0	1	1	0
B	0	0	0	1	0	0
F	0	0	0	0	0	1
D	0	0	0	0	0	0
A	0	0	0	0	0	0

FIG. 10

Examples of Graphs Embedded
in Cursive Word

The figure displays three examples of cursive handwriting, each showing a word with a specific graph embedded. The first example is 'Houston' with a 'Ho' graph embedded at the end. The second example is 'Houston' with a 'ous' graph embedded at the end. The third example is 'Houston' with an 'stor' graph embedded at the end.

Houston Ho

Houston ous

Houston stor

FIG. 11

Examples of Known Characters
Embedded in Unknown Graphs

Hor Hor Ho

ous ous ous

stor stor sto

FIG. 12

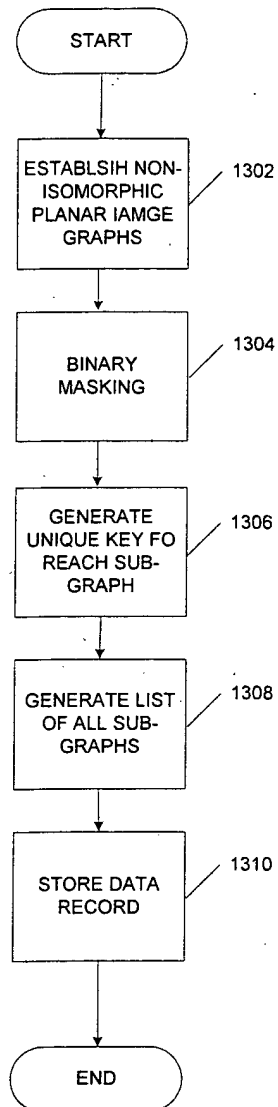


FIG. 13

15 Non-Isomo. LNC forms
of Maximal Simple Connected Planes

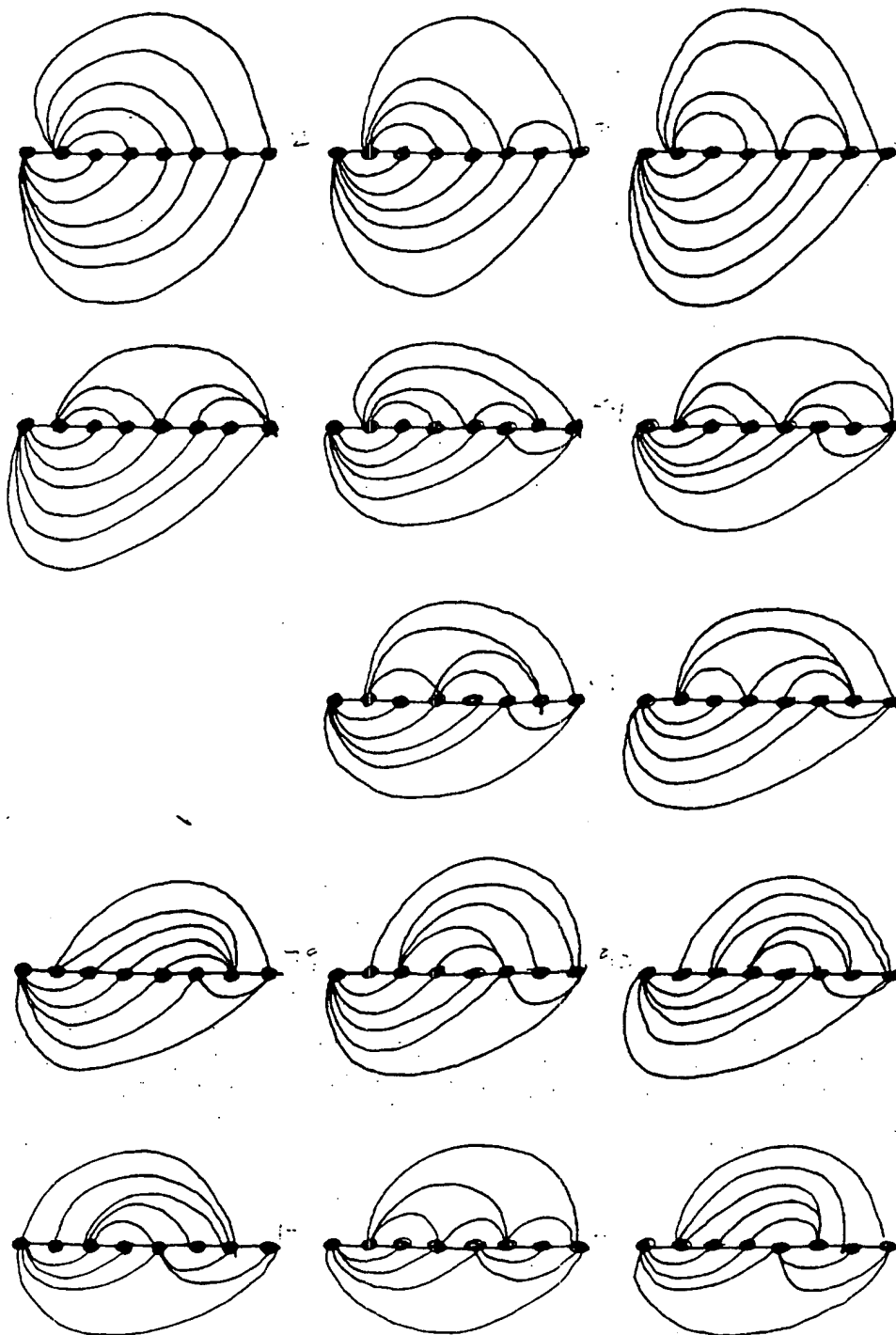
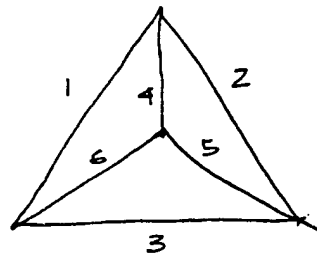
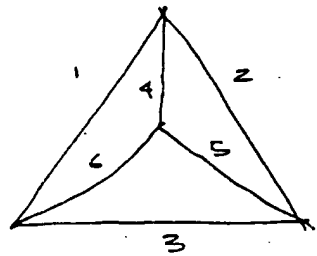
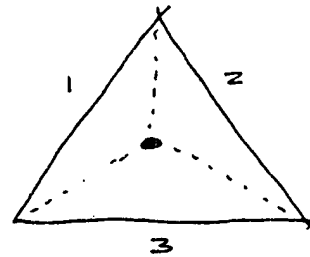


FIG. 14

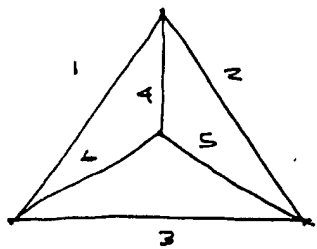
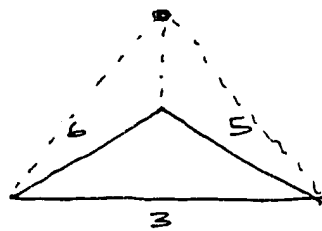
Examples of Edge Marking to
 Isolate Embedded Graphs



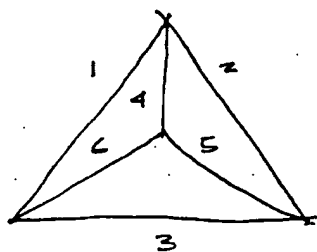
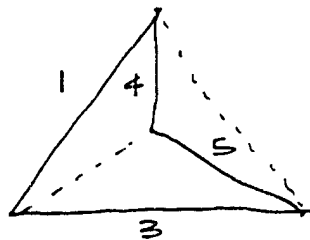
Edge 1 2 3 4 5 6
 Mark 1 1 1 0 0 0



Edge 1 2 3 4 5 6
 Mark 0 0 1 0 1 1



Edge 1 2 3 4 5 6
 Mark 1 0 1 1 1 0



Edge 1 2 3 4 5 6
 Mark 1 0 1 0 0 1

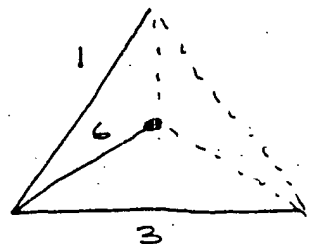
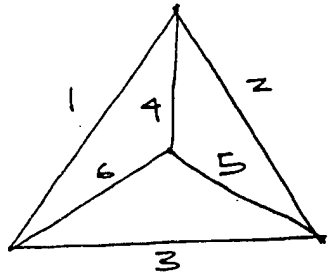
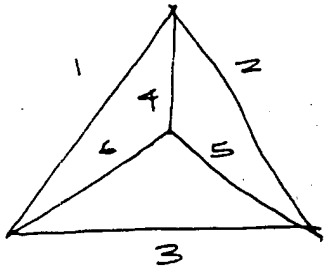
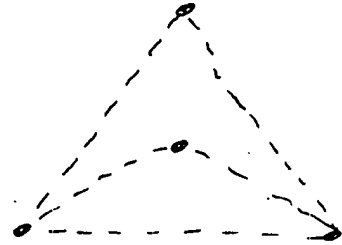


FIG. 15

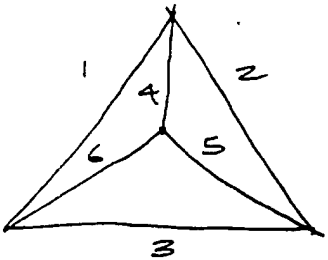
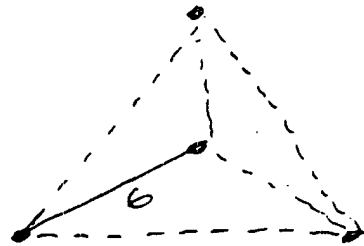
Example of Mask Using Bits in
 Binary Encoding of Counter



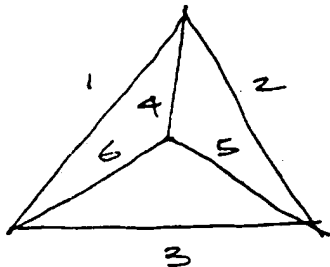
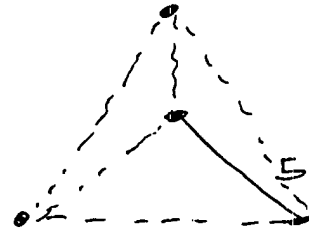
Counter 0
 Edge 1 2 3 4 5 6
 Mask 0 0 0 0 0 0



Counter 1
 Edge 1 2 3 4 5 6
 Mask 0 0 0 0 0 1



Counter 2
 Edge 1 2 3 4 5 6
 Mask 0 0 0 0 1 0



Counter 3
 Edge 1 2 3 4 5 6
 Mask 0 0 0 0 1 1

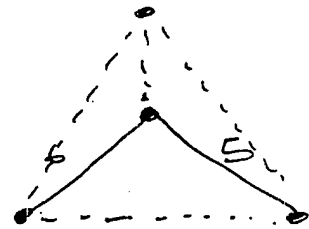
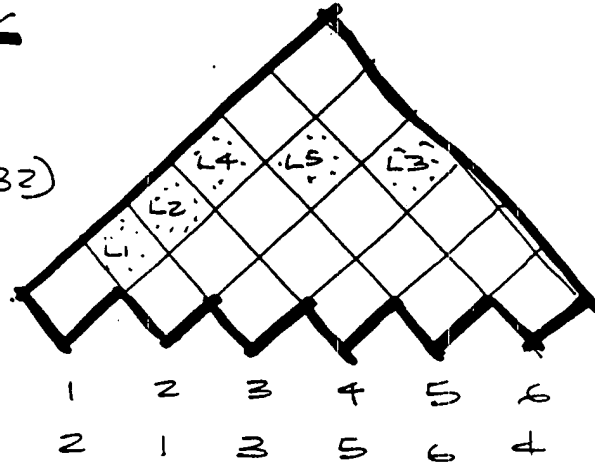


FIG. 16

Relationship of Translation Sequence to Weighted Key Matrix

Weighted Matrix for Character "E"

(Figure 14 from U.S. Patent 5,267,332)



Adjacency Table Node Sequence

Translation Table

Original Sequence	New Sequence
2	1
1	2
3	3
5	4
6	5
4	6

FIG. 17

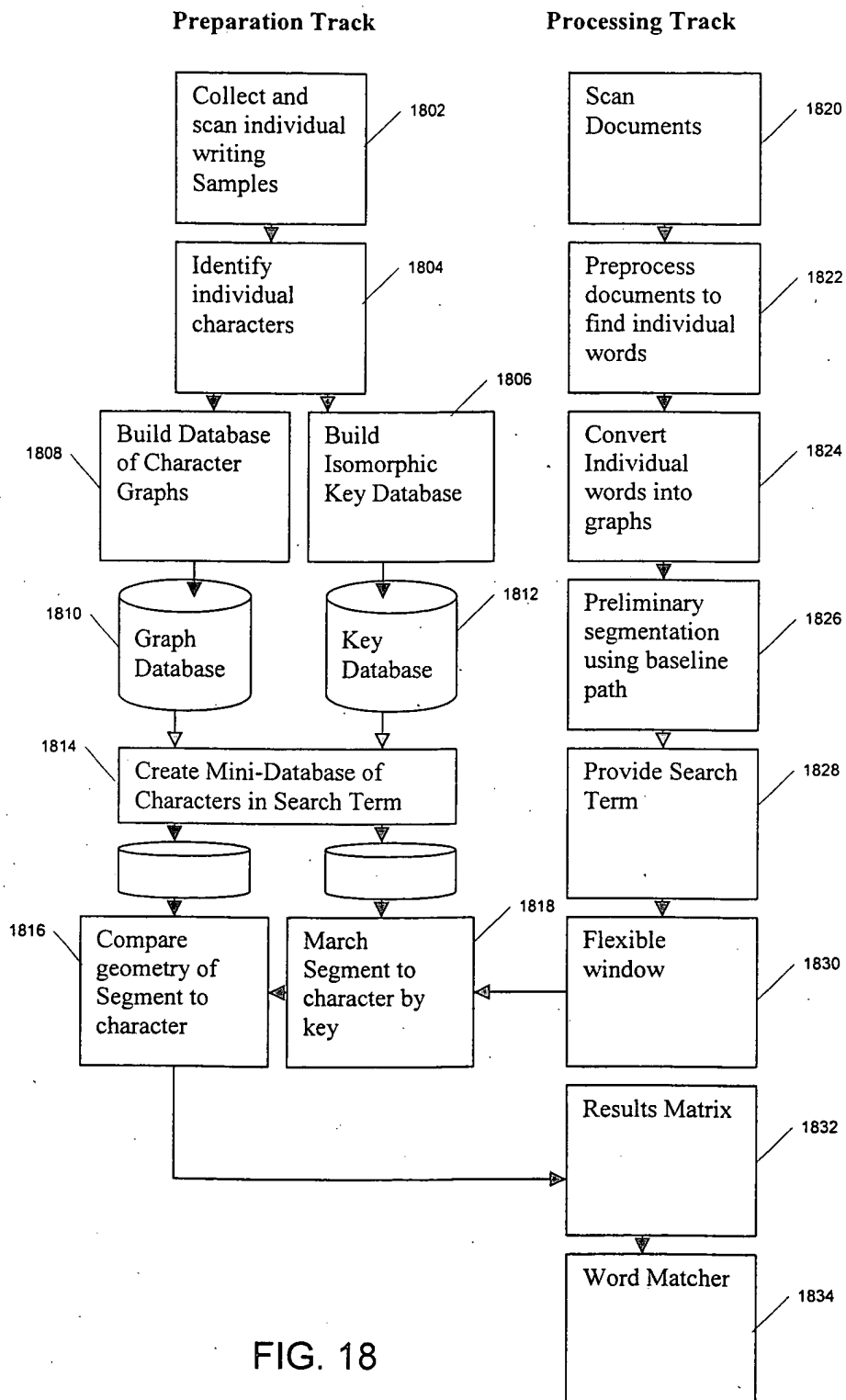


FIG. 18

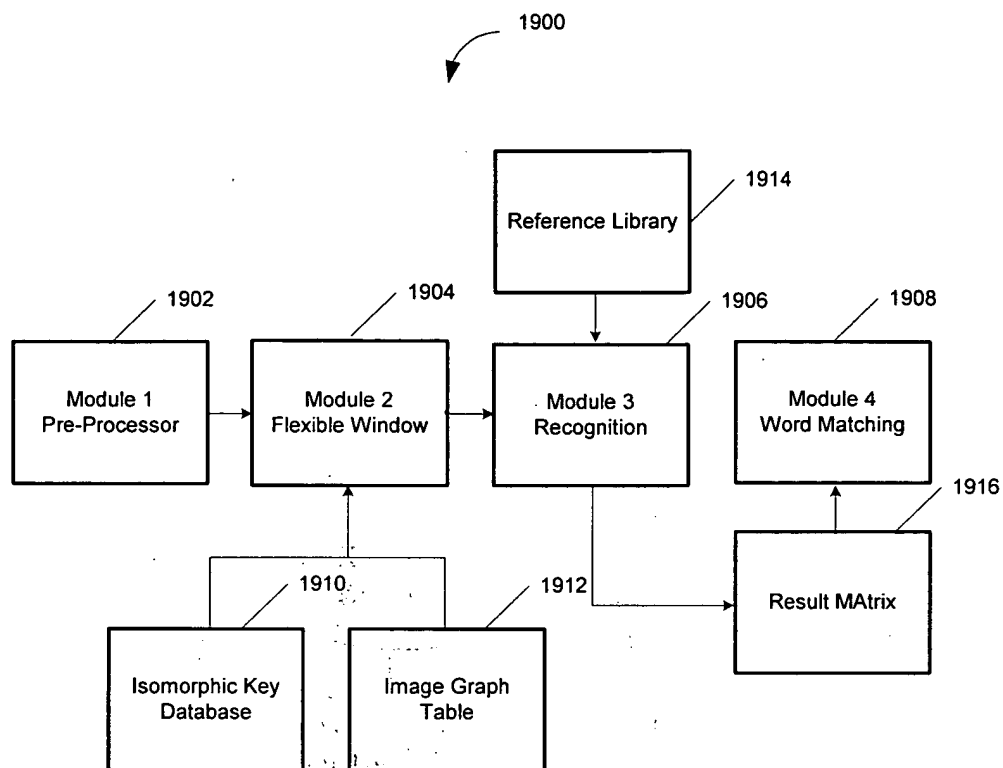
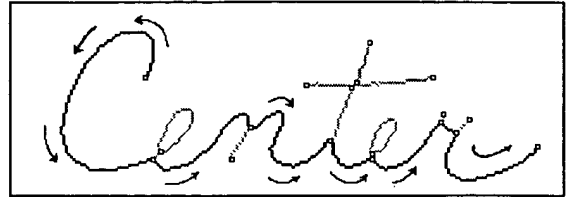


FIG. 19

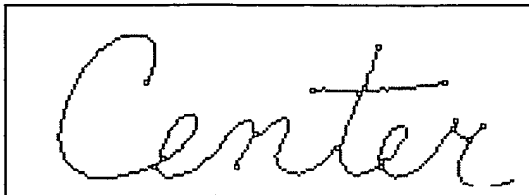
: Creation of the Baseline Path



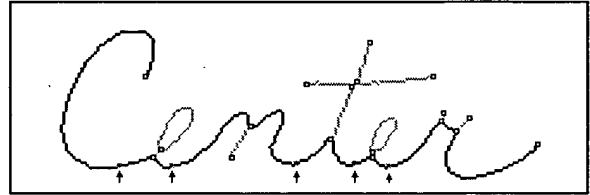
Item a.



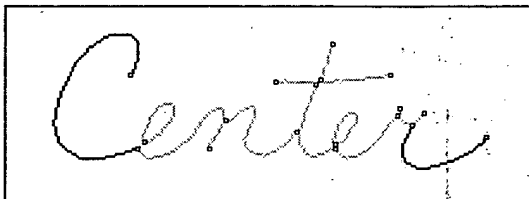
Item e.



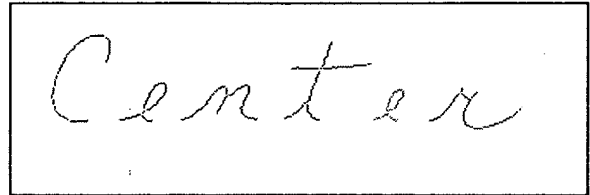
Item 1b.



Item f.



Item c.



Item g.

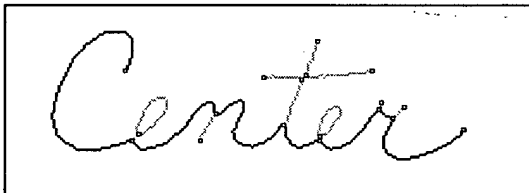
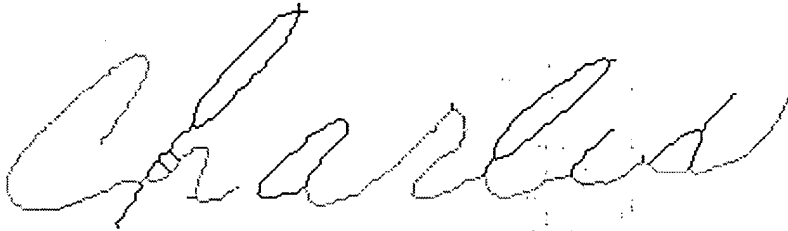


FIG. 20

A handwritten signature in black ink that reads "Charles". The script is fluid and cursive, with a large initial 'C' and a long, sweeping tail on the 's'.

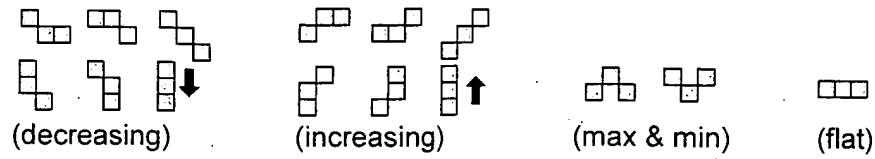
Item a.

A handwritten signature in light gray ink that reads "Charles". It is a duplicate of the signature in Item a, showing the same cursive style and fluid strokes.

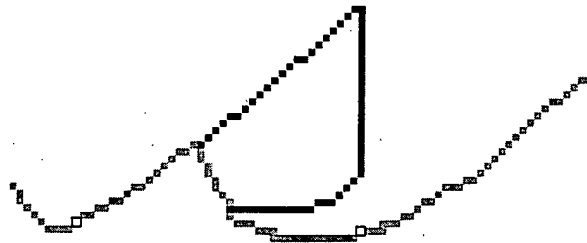
Item b.

FIG. 21

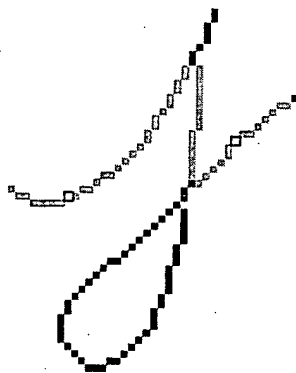
Pixel Patterns for Segmenting Zones



Item a.



Item b.



Item c.

FIG. 22

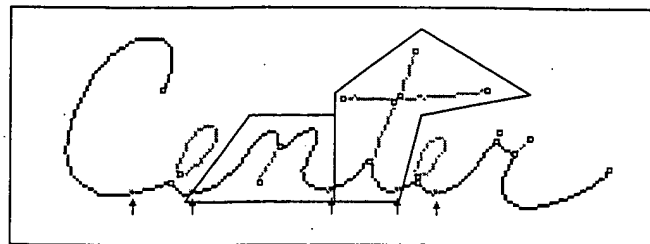
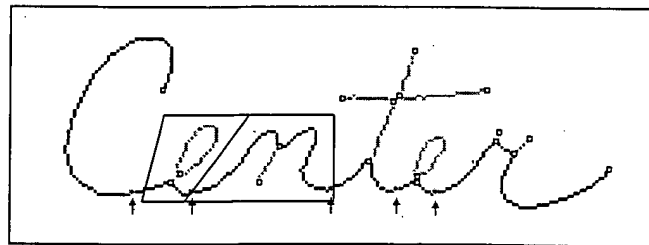
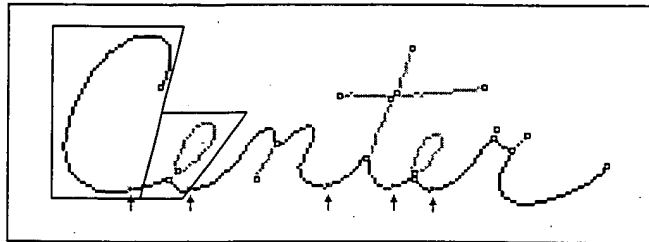
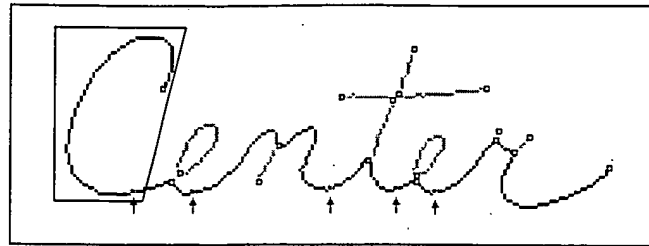


FIG. 23